

AMENDMENTS TO THE CLAIMS

In the claims:

1. (Previously presented) A semiconductor structure comprising: a substrate, a $\text{Sn}_z\text{Ge}_{1-z}$ layer formed over the substrate, and an essentially single-phase $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ layer formed over the $\text{Sn}_z\text{Ge}_{1-z}$ layer.
2. (Original) The semiconductor structure of claim 1 wherein the substrate comprises silicon.
3. (Original) A method for synthesizing a compound having the molecular formula $\text{H}_3\text{Si-GeH}_3$, the method comprising combining $\text{H}_3\text{SiO}_3\text{SCF}_3$ with KGeH_3 under conditions whereby $\text{H}_3\text{Si-GeH}_3$ is obtained.
4. (Previously presented) The structure of claim 1, wherein z is about 0.01 to about 0.05.
5. (Previously presented) The structure of claim 1, wherein x is about 0.01 to about 0.25; and y is about 0.01 to about 0.11.
6. (Previously presented) The structure of claim 1, wherein x is about 0.01 to about 0.25; y is about 0.01 to about 0.11; z is about 0.01 to about 0.05; and the substrate comprises silicon.
7. (Previously presented) The structure of claim 1, wherein the $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ layer is strained.
8. (Previously presented) The structure of claim 1, wherein the $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ layer is relaxed.
9. (Currently amended) A method to prepare [[the]] a semiconductor structure ~~according to claim 1,~~ comprising the steps of,
 providing a substrate;
 depositing a $\text{Sn}_z\text{Ge}_{1-z}$ layer over the substrate; and

depositing an essentially single-phase $Ge_{1-x-y}Si_xSn_y$ layer over the Sn_zGe_{1-z} layer.

10. (Previously presented) The method of claim 9, wherein the $Ge_{1-x-y}Si_xSn_y$ layer is deposited by precursor chemical vapor deposition, wherein the precursor chemical vapor comprises SnD_4 and H_3SiGeH_3 .

11. (Previously presented) The method of claim 9, wherein the Sn_zGe_{1-z} layer is deposited by precursor chemical vapor deposition, wherein the precursor chemical vapor comprises SnD_4 and Ge_2H_6 .

12. (Previously presented) The method of claim 9, wherein the substrate comprises silicon.

13. (Previously presented) The method of claim 9, further comprising the step of annealing the Sn_zGe_{1-z} layer prior to depositing the $Ge_{1-x-y}Si_xSn_y$ layer.

14. (Previously presented) The method of claim 9, wherein z is about 0.01 to about 0.05.

15. (Previously presented) The method of claim 9, wherein x is about 0.01 to about 0.25; and y is about 0.01 to about 0.11.

16. (Previously presented) The method of claim 9, wherein x is about 0.01 to about 0.25; y is about 0.01 to about 0.11; z is about 0.01 to about 0.05; and the substrate comprises silicon.

17. (Previously presented) The method of claim 9, wherein the $Ge_{1-x-y}Si_xSn_y$ layer is deposited at a temperature of about $310^{\circ}C$ to about $375^{\circ}C$.

18. (Previously presented) The method of claim 3, wherein the $H_3SiO_3SCF_3$ and $KGeH_3$ are combined at about $-60^{\circ}C$.

19. (Previously presented) An alloy of the formula, $Ge_{1-x-y}Si_xSn_y$, wherein x is about 0.01 to about 0.25 and y is about 0.01 to about 0.11.

20. (Previously presented) The alloy of Claim 19, wherein x is about 0.13 to about 0.20.

21. (Previously presented) The alloy of Claim 20, wherein y is about 0.07 to about 0.11.

22. (Previously presented) The alloy of Claim 20, wherein y is about 0.01 to about 0.06.

23. (Currently amended) A semiconductor structure comprising: a substrate, a $\text{Sn}_z\text{Ge}_{1-z}$ layer formed over the substrate, and a layer of an alloy of the formula, $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$, wherein x is about 0.01 to about 0.25 and y is about 0.01 to about 0.11~~the alloy of Claim 19~~ formed over the $\text{Sn}_z\text{Ge}_{1-z}$ layer.

24. (Previously presented) The semiconductor structure of claim 23 wherein the substrate comprises silicon.

25. (Previously presented) The semiconductor structure of Claim 1 wherein the $\text{Sn}_z\text{Ge}_{1-z}$ and $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ layers are lattice-matched.

26. (Previously presented) The semiconductor structure of Claim 23 wherein the $\text{Sn}_z\text{Ge}_{1-z}$ and $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ layers are lattice-matched.

27. (Currently amended) A structure comprising: a $\text{Sn}_z\text{Ge}_{1-z}$ layer and an alloy of the formula, $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$, wherein x is about 0.01 to about 0.25 and y is about 0.01 to about 0.11~~a layer of the alloy of Claim 19~~ formed over the $\text{Sn}_z\text{Ge}_{1-z}$ layer.